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September 5, 2024

Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

RE: Wireless Telecommunications Bureau and Office of Engineering and Technology Seeks Comment on NextNav Petition for Rulemaking

WT Docket No. 24-240
RM-11989

Dear Ms. Dortch:

TransCore is one of the earliest manufacturers of RFID tags and readers, starting in 1987. Today, our Amtech Technology is licensed in the 902 to 904 and 909.75 to 921.75 MHz LN Radio Service. Over nearly 50 years, TransCore has produced more than 125 million RFID tags and 10's of thousands of RFID readers used across the nation's toll roads, airport ground transportation systems, parking facilities, neighborhood and college campus-controlled access gates, and the expansive U.S. freight rail system. TransCore's clients include government agencies and private companies, from neighborhood parking lots exiting one car at a time to the largest toll agencies in the U.S., processing billions of RFID transactions yearly.

We are filing Comments in FCC WT Docket 24-240 in ***opposition*** to the Petition for Rulemaking as outlined by the NextNav Petition and Supplemental Rules filed in April and on June 6, 2024. Our government and private customers have been using this band for years without issues for identifying vehicles, but now NextNav is trying to make unworkable, extensive changes to the regulatory and operational environment. NextNav's proposed 5G PNT and cellular buildout in the same band undoubtedly will cause interference to our customer's operations. The filing made with the FCC by the E-ZPass Group (made up of over 35 governmental toll road agencies) details this interference, and TransCore agrees with and supports E-ZPass's comments. Similarly, TransCore backs the filings in opposition from the International Bridge, Tunnel & Turnpike Association (IBTTA) and other industry governmental agencies and companies opposing the NextNav Petition.

NextNav's objective is to build out a 5G network that would communicate between high power base stations, handheld mobiles and near-roadside fixed equipment, all of which would overlap bandwidth used by TransCore's customers' RFID devices. As detailed in the filed NextNav Supplemental rules, and in discussions with NextNav since those filings, the NextNav proposed use of the band will cause interference with existing RFID uses. NextNav's subsequent statements and presentations have not shown any solution that will prevent interference from their proposed 5G network buildout.

Technical Issues With NextNav's Petition

The technical details showing interference to the current generation of RFID tags and readers are well-documented. Moreover, NextNav has not shown (nor is TransCore aware of) any reasonable filtering improvements available to manufacturers and users of roadway RFID tags and readers, in either high-speed vehicle identification or congested roadways, that would ensure the necessary performance levels required for tag reading to overcome the interference from NextNav's proposed network buildout. Specific issues related to NextNav's proposed network and interference include:

- **Interference from a Distance**. NextNav's proposed network buildout and subsequent leased data usage to mobile communications providers would require base stations located within distances where interference could occur.
    - *High Power*. NextNav proposed 3,850 to 20,000 Watts ERP in the 10 MHz band for base stations located from 918 – 928 MHz
    - With higher power and more base stations, NextNav is greatly expanding the interference compared to the status quo. NextNav would also add more interference from new handheld transmissions in the band.
- **No Guard Bands**. The 5G signals from base stations bleed into the Automatic Vehicle Identification LN Radio Service non-multilateration LMS band, where the current 12 MHz contiguous allocation is already licensed for tolling, rail, and other tag identification uses.
- **In-vehicle device Interference**. NextNav envisions and has proposed handheld or dash mounted cellphones transmitting in the 902-907 MHz band.
    - The proposed +23 dBm from the proposed new 902 to 907 MHz cell band uplink from handhelds would significantly interfere with windshield mounted tags less than 1 meter away – a radius that would encompass nearly every such tag.
- **Tags Cannot be Adapted for NextNav's Network**. The low-cost tags of today do not have the ability to mitigate or filter most potential NextNav signals from NextNav's expected cell sites or handhelds. Nor could any of today's low-cost tags be redesigned in a cost-effective manner to serve the applications for which they are used.
- **Trucking Weigh Station Bypass Greatly affected**. The longer range, ASTMv6 Truck Weigh Station Bypass tags are much more sensitive than passenger car tags, creating even greater expected interference levels, necessitating larger protection distances required.
- **Unlicensed user impact.** Even Part 15 users in many areas would be interfered with.

And, perhaps most critically, ***NextNav has proposed elimination of the Safe Harbor***, despite all these interference issues. NextNav has proposed very onerous rules with priority against practical operation by currently licensed Part 90 and Part 15 users. Performance impacts are expected in the proposed RF environment, meaning many situations will be totally jammed.

NextNav's proposal is simply unworkable. NextNav needs to look to other, existing 5G bands such as 600, 700, or 870 MHz where PNT could be included for its solutions.

The Petition's Insurmountable Deficiencies

NextNav's proposed rules are inadequate to provide protection to incumbent users. It is evident from their filings and subsequent writings that NextNav failed to realize how intensive the spectrum is used in today's world of Part 90 licensed electronic non-stop tolling and connected Part 15 devices.

Looking at the total industry, LN Radio Service (non-M-LMS) toll agencies and other end user organizations have billions of dollars of installed readers, tags, and systems and operations that could be affected by the NextNav Petition. The costs by the users of existing tolling systems to attempt to change or mitigate, even if that were technically feasible, are enormous.

The FCC asks if simply requiring NextNav to pay for re-tuning would suffice, but the points made above show that interference to tags and, in some cases, re-tuned readers would be so significant that operation could not continue. Tags cannot be re-tuned. Low-cost tags cannot be redesigned with sufficient filtering to prevent devastating interference from NextNav. And jamming to the tags from both downlinks and uplinks to readers could continue to occur under many conditions.

Furthermore, most tolling systems in use in America today have multiple readers per location at multiple locations. Squeezing from 12 MHz to 11 MHz would significantly impair performance due to the multiple frequencies needed for backscatter at each location. Additionally, that squeeze would create even greater interference with nearly all ASTMv6 tags in use, and most of the TDM protocol tags.

NextNav proposes field testing as sufficient to identify and address interference issues, but the basic science in RF path loss in urban and rural areas at these frequencies is already known: the proposed, high base power would mean that most all locations within several miles would experience interference. Additionally, tags would incur interference from in-vehicle mobiles, handsets, or nearby fixed links passing through the tag read zone of the fixed readers. This will result in the jamming of the interrogation message to the tag.

However, expansive and expensive field testing *would be* required to attempt to prove performance levels do not exceed the industry-requisite 1 error in 10,000 vehicle passes for any of the variety of installations or protocols involved. Such testing would be necessary for all the multitudes of reader and tag models manufactured for tolling industry use by several companies, not just TransCore. For the many reasons expressed in these comments, field testing will probably show unacceptable performance with the result that NextNav would only be allowed very low density, excessive stand-off distance in base station locations. Additionally, handset interference also would be significant and likely.

Modern RFID tolling systems are designed to operate within the current 902 to 928 MHz RF environment. Any forced migration to another band would have astronomical costs for research and design of new equipment, then billions of dollars more for installation and transition to the new systems.

The FCC Should Ensure Non-M-LMS Protection and Priority

NextNav is proposing co-equal rules, but its proposal is for a very high-power broadband service serving a large area. What is really needed is clear protection and priority to the licensed Part 90 LN Radio Service installations, referred to as non-M-LMS. These non-multilateration backscatter systems should have protection at a higher priority than a 5G service since there are so many alternative 5G frequency bands to use.

The FCC recognizes that interference protection is normally afforded to incumbent licensees. For example, when testing or higher power operation from airplanes is requested (STA callsign WX9XAV, special condition 6), the FCC routinely requires Prior Consent from incumbent licensees within 100 miles given line of sight.

It is hard to see how NextNav can solve the problems of interference to Part 90 LN Radio Service Licensees, or even Part 15 licensees, to allow proper operation of these existing systems. No evidence has been given to show the high-performance levels of tolling or other AVI (Automatic Vehicle Identification) operation can be preserved if NextNav is allowed to operate as proposed. AVI reader installations are ubiquitous throughout urban and rural America: railroads, airports, facility gates, parking lots, city streets for congestion pricing, not to mention toll roads. Agencies are systematically replacing coin-collecting tollbooths in favor of over-the-road, gantry installations.

Since AVI toll tagging and its other applications exist nationwide, as more development occurs, more AVI installations will be needed. Each of those will also require protection from the NextNav High Power Signals. The best way to ensure this is to reject the NextNav Petition. But if the FCC does not reject the Petition, TransCore requests interference protection for LN Radio Service Licensees, similar to what is afforded other incumbent licensees.

__Conclusion__

The 902-928 MHz band has proven to be a cost-effective and reliable technological solution for myriad tolling and parking applications. RFID technology around the 902-928 MHz band is critical to the tolling solutions deployed in the industry today and should not be disturbed. The cost impacts to governmental tolling agencies from NextNav's Petition would be significant and cause major disruptions to the U.S. tolling system. And small-budget entities, like neighborhoods and parking garages with controlled access gates, would have no recourse at all.

NextNav has numerous other 5G bands and existing frequencies under existing rules with which to operate, such as 600, 700, or 870 MHz. Under any reasonable cost-benefit analysis, there is no justification to accept the NextNav Petition. TransCore respectfully requests that the FCC reject the NextNav Petition.

Signed,

R. Clint Holley
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TransCore, LP